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**THE
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Kush:

Origins of the strain

ISSUE 1

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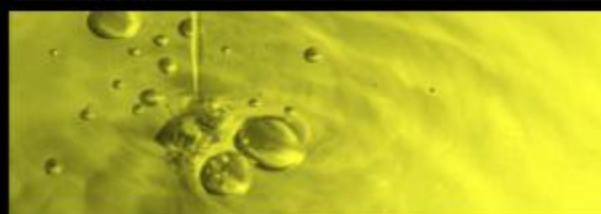
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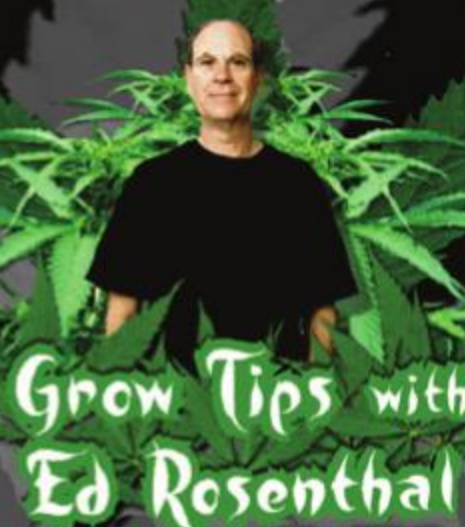
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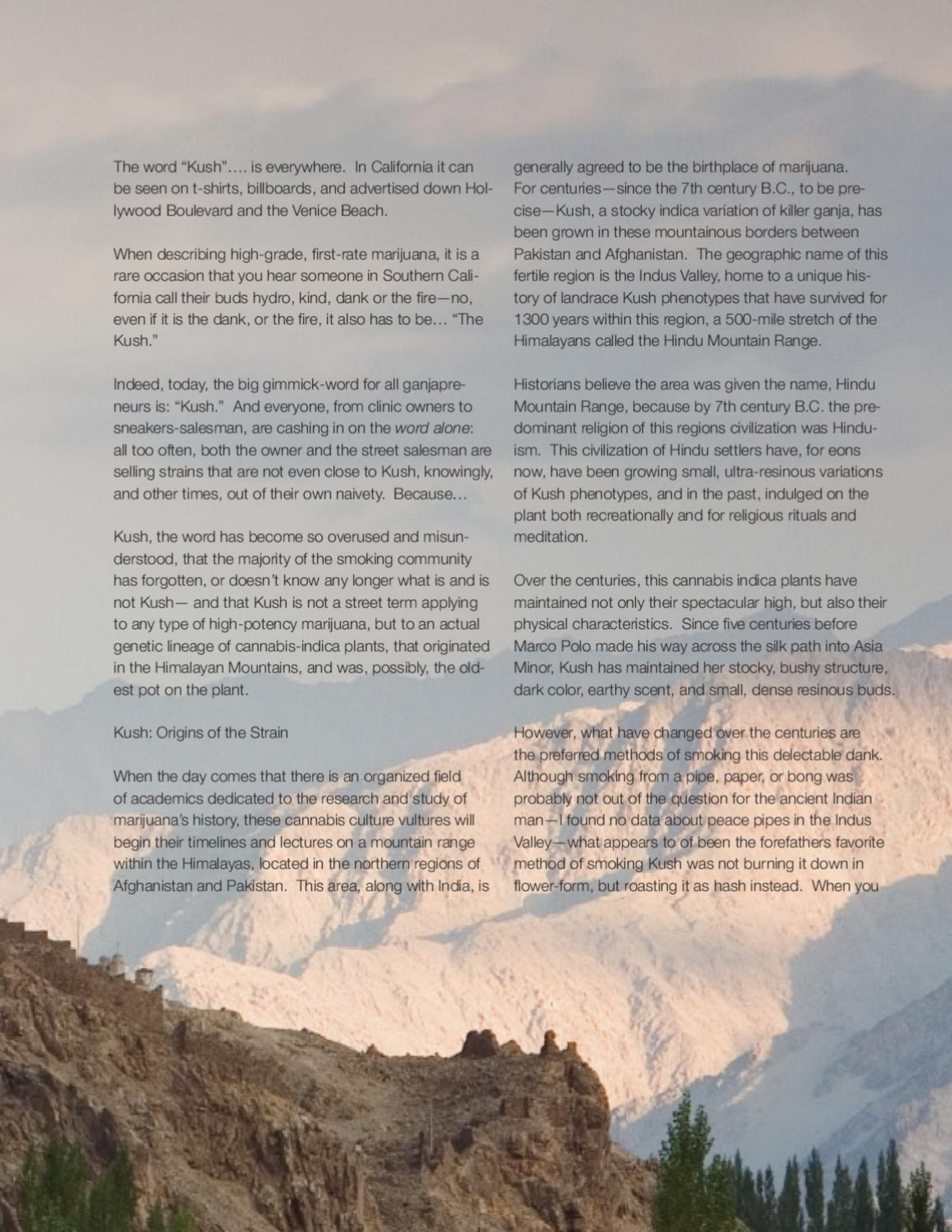
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KUSH

ORIGINS OF THE PLANT; HISTORY OF THE WORD





The word “Kush”... is everywhere. In California it can be seen on t-shirts, billboards, and advertised down Hollywood Boulevard and the Venice Beach.

When describing high-grade, first-rate marijuana, it is a rare occasion that you hear someone in Southern California call their buds hydro, kind, dank or the fire—no, even if it is the dank, or the fire, it also has to be... “The Kush.”

Indeed, today, the big gimmick-word for all ganjapreneurs is: “Kush.” And everyone, from clinic owners to sneakers-salesman, are cashing in on the *word alone*: all too often, both the owner and the street salesman are selling strains that are not even close to Kush, knowingly, and other times, out of their own naivety. Because...

Kush, the word has become so overused and misunderstood, that the majority of the smoking community has forgotten, or doesn't know any longer what is and is not Kush— and that Kush is not a street term applying to any type of high-potency marijuana, but to an actual genetic lineage of cannabis-indica plants, that originated in the Himalayan Mountains, and was, possibly, the oldest pot on the plant.

Kush: Origins of the Strain

When the day comes that there is an organized field of academics dedicated to the research and study of marijuana's history, these cannabis culture vultures will begin their timelines and lectures on a mountain range within the Himalayas, located in the northern regions of Afghanistan and Pakistan. This area, along with India, is

generally agreed to be the birthplace of marijuana. For centuries—since the 7th century B.C., to be precise—Kush, a stocky indica variation of killer ganja, has been grown in these mountainous borders between Pakistan and Afghanistan. The geographic name of this fertile region is the Indus Valley, home to a unique history of landrace Kush phenotypes that have survived for 1300 years within this region, a 500-mile stretch of the Himalayans called the Hindu Mountain Range.

Historians believe the area was given the name, Hindu Mountain Range, because by 7th century B.C. the predominant religion of this regions civilization was Hinduism. This civilization of Hindu settlers have, for eons now, have been growing small, ultra-resinous variations of Kush phenotypes, and in the past, indulged on the plant both recreationally and for religious rituals and meditation.

Over the centuries, this cannabis indica plants have maintained not only their spectacular high, but also their physical characteristics. Since five centuries before Marco Polo made his way across the silk path into Asia Minor, Kush has maintained her stocky, bushy structure, dark color, earthy scent, and small, dense resinous buds.

However, what have changed over the centuries are the preferred methods of smoking this delectable dank. Although smoking from a pipe, paper, or bong was probably not out of the question for the ancient Indian man—I found no data about peace pipes in the Indus Valley—what appears to of been the forefathers favorite method of smoking Kush was not burning it down in flower-form, but roasting it as hash instead. When you

KUSH

ORIGINS OF THE PLANT, HISTORY OF THE WORD

understand the highly resinous and sticky nature of freshly cultivated Kush plants, making hash out them makes a good deal of sense.

For that reason—the resinous nature of the buds, and no doubt, the stellar hash high-- what the Hindu did with their buds was cut the newly finished plant at the stocks. After the cutting, they would break apart the sturdy branches of Kush colas and arduously rub these between his hands for a long period of time.

A delicate amount of pressure was used while he/she rolled the Kush branch and colas, which were placed in a bucket or container, which collected the tiny particles of weed matter that was falling off the entire stalk—colas, stem and all. These microscopic weed skimming's that were being manually separated by this rubbing technique were the THC trichomes on the outside of the resin-coated indica strain. This small matter of highly potent THC trichomes was then condensed into either a kief, or hashish, which, long before vaporizers and zigzags were invented, was the way cannabis made its way into the consciousness of the ancients

(Note: Each country in this part of the world has its own

name for the processed finished product which has also survived over time; for example, in India, the hash made from flower tops which is hand-rolled or pressed till very compacted, is called chara. The THC which falls off the plant after it is cultivated simply by shaking it, and is also collected in India, is a term which has really stuck over the centuries: it is called kief.)

But how did the fabled Kush genetics make their way to the Western world? Who is responsible for this trans-pacific passage of the Pakistani pot?

The answer: the strain-seeds were smuggled. By who is the real question? Stoner lore places migratory credit in the hands of nomadic, righteous potheads who flew to the region, scouted out the seeds, procured a small collection, and smuggled them back into the United States. This is believed to have taken place in the early 1970's, with a massive number of crosses taking place out of a very small number of original landrace seeds since their arrival.

(Note: For more information on the original American Kush seeds, take a look on the web at the many stories about: "The Thirteen Original Kush Seeds." There is a take on this



surfer-smuggling story that speaks of their being only thirteen original seeds which were, collectively, responsible for breeding some of the best strains—the strains that would go on to create the modern “kind” cannabis market that developed sometime in the mid-twentieth century. I see a movie coming of this tale.)

Kush: The Word

Kush, the word, refers to a type of cannabis plant that has its’ genetic origins in the Himalayan Mountain range. The etymological roots of the word Kush, are highly disputed and depend on which language you choose to believe it originated first. The cases for the origin of the word, and what it means, are as follows:

First Theory:

Persian Roots: In a number of Iranian languages still spoken in the Hindu Valley Region (a 500-mile stretch), and the areas surrounding, peaks and mountaintops often have the ending, -Kush, in their names. Kush, could derive from the Persian mountain term: Kush, and its attachment to the mountain population that grew the phenomenal phenotype.

Second Theory:

Perhaps, salesman along the silk road were selling Hindu

Kush, and even centuries back, it was known by the general public as the best type buds in the world. Maybe Marco Polo found some on his way back, and that would explain the real “spice” phenomenon of history we never really understood.

Third Theory:

In the Fourth Century B.C., following the conquest of the Indus Valley by Alexander the Great, Macedonian-Greek rule lasted for three centuries, until its collapse was followed by a civilization of people referred to in history as Kushans, who were a part of the Kushan Empire, which had its capital near modern day Kabul. It is possible these people were getting so high off their own stash of Indus Valley buds they decided to name it after themselves.

Fourth Theory:

In the ancient Scythian language, the Hindu Mountains were named: Hindu-kus, in which the word kus is defined as side, or region. Some argue that when the British took Imperial control over the Indian Kingdom, the word Kush might of become a corrupted English version of the Scythian term: kus.

Fifth Theory:

Who really cares, this weed is dank and the word Kush is catchy as all hell.



The Origin of **O.G. KUSH**

by J. Deiker

Today, in California, from the long list of fifty-seven varieties of medicinal marijuana strains a patient may choose, there has been one strain, which has for three years running, been producing the most desired buds on the market. That strain is OG Kush.

Just as the Purps, Sour Diesel, Headband and Master Kush, once had the coast up in smoke, today, OG Kush has become the most preferred puff in California.

However, unlike all the aforementioned strains, the difference between OG Kush and those favorites from the past is this plant's genetic history—nobody seems to really know what OG Kush is?

Between the patients and pot-practitioners, owners and chronic connoisseurs, there are numerous stories and contradictions about the plants origins and genetic lineage.

In light of this general misunderstanding, your correspondent wishes to set the record straight and reveal to the reader the real origin of OG Kush; or at the least, the most verifiable account of how this amazing strain came about.

Lets go back in time to the year of 1991...

George Bush Sr. is the President; Nirvana has just released Nevermind; kids are wearing flannel and growing morose; MC Hammer and Vanilla Ice still have all their money; the Braves are winning the series; Saved By the Bell is on every channel. Somewhere within this odd epoch in time lived a rambling bunch of underground hippy-free spirited growing types residing in Colorado, California, Massachusetts and New York.

In the case of OG Kush, the flower's origins seem to of began in Colorado. The most common tale behind OG's ancestry is that she originated from Chemdawg. Chemdawg, or Chem, as it is known in parts of the East, is a lime green, whitish, super sour sativa originally believed to have been grown in Colorado, and or Wyoming.

(Note: There are two other legs to this tail, resulting in two other sisters. As it goes, this particular strain of ChemDawg also made its way to the East Coast after cuts were shared at a Grateful Dead show. After this trade-off, the tale continues that the seeds of S1 ChemDawg were brought to somewhere in New York and the best of Colorado's ChemDawg was crossed with a (Mass. Super Skunk X Northern Lights #5) phenotype. This cross, it is said, became the phenotype for Sour Diesel (ChemDawg



x Mass. Super Skunk/Northern Lights #5). Once the Sour Diesel phenotype was established—known, as Diesel, in the East—that was then crossed again with the (Mass. Super Skunk x Northern Lights) plant. This end result was a strain known on the East Coast as Daywrecker, and on the West Coast as Headband (Diesel x Mass. Supper Skunk/Northern Lights)). But back to the OG...

Through a network of friendly cultivators, clones of original (S1) 1991 ChemDawg were brought from Colorado to Lake Tahoe, or Grass Valley to be more precise. (This particular trade-off for the Chem-cuts is said to of taken place at a Phish concert). Once the ChemDawg from Colorado was harvested in California, it's cultivators decided to cross it with something else. That *something else*, is the mysterious unknown variable in the genetic ancestry of OG Kush.

As stoner-lore goes, the ChemDawg was crossed with a hybrid phenotype of (Old World Pakistani Kush x Lemon Thai). These two plants, the ChemDawg and the (Pakistani Kush/Lemon Thai) pheno were cross-bred somewhere on the coast of Mendocino County, but I have also heard Sunset Beach County was the original breeding grounds of the first OG phenotypes?

In any case, if the entire tale is true, it means that the real genetics of OG Kush are: (Original Colorado ChemDawg x (Pakistani Kush x Lemon Thai)).

There is a good deal of empirical, and smoke-able, evidence to add validity towards the potentiality of this being OG's original genetics: based on the physiological effects, looks, and aroma of OG Kush, this genetic background makes perfect since. Let me elucidate:

When grown, smoked, or even just placed side by side each other, one can easily discern that ChemDawg, Sour Diesel, Headband and OG Kush are from the same phenological family tree. They are sisters, in fact, each of them sharing similar growing patters, textures, colors, and, of course, that unforgettable sour

aroma and taste they all share.

However, OG Kush, though very much like the other three, has more than just a sour note in its stench, OG also has a strong aroma of lemon and pine. (Lemon Pine Sol, the cleaner being the most common description for the OG aroma). It is the ChemDawg, which accounts for the natural sour pungency of OG Kush, while the (Lemon Thai x Pakistani Kush) pheno, the spicy lemon-pine aroma that OG effuses as well. All these smell-information-correlations, however, are only possible if the tale of OG's genetics is true.

Other than the genetic lineage of OG, the biggest misconception about the bud on the streets is the name itself—the meaning of the letters O and G, in OG Kush.

Let us set the record straight: OG Kush probably does not stand for, Original Gangster Kush. I highly doubt that the presumably peaceful growers spread between the coasts, attendees of Phish and Great Dead concerts, who had taken the time to grow and nurture these plants when it was highly illegal to do so, would ever of named their finished flowers: Original Gangster. No. I highly doubt that this was their nomenclatural intention.

As the more probable myth goes, the real reason for the OG in OG Kush is this: after the unknown California cultivator responsible for crossing the Colorado ChemDawg with the secret ingredient (Pakistani Kush x Lemon Thai) had done so successfully, being that the new cross-phenotype was grown near the salty beaches of California, and that it, by lore, has some actual Hindus Valley Kush lineage in its' genetics, the perfect name for the new flower was... Ocean Grown Kush.

The O, and the G, in OG Kush, refer to the conditions under which this variation of Kush were grown: The cool bellows of the Pacific Coast's perfect cannabis cultivating currents.

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The Hemp Oil that Cures Cancer...

*and the Drug Companies
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"You have to put it under your tongue and hold it there. It's thick, like goo, but just let it sit and absorb into your gums. And don't be afraid to get it caught in your teeth, it won't hurt. Just swish it around in there and let it dissolve," said the Jerry Garcia look-alike, sitting to my right.

Part One: My Introduction to The Oil...

It was two years ago. I was on a couch in a modest home in Lake County, California, and these were the instructions being given to me by the Emperor, Mr. Jack Herer himself.

Jack Herer has been leading the charge to

legalize hemp and marijuana in this country for over thirty years. His book: *The Emperor Wears No Clothes* is the best selling Hemp book of all time. His voice is one of the most influential and recognizable within the marijuana community in the world.

A cannabis folk-legend, I never planned on meeting *the man* behind the hemp movement. We were introduced through a mutual acquaintance during a trip up to Northern California. I had heard many things about Jack and his convictions, and honestly, back then, some of them still seemed a bit too radical for even my tastes-- conspiratorial towards my government in a way I was not yet ready to swallow at the

time. There were other stories, or one, the one I am about to discuss here—of the miracle oil—which I found downright unbelievable

However, after spending a night in his home, becoming friends since, and digesting all the revelations heretofore, I am officially a believer.

I have been a believer since the first night we met. That night the nucleus of our conversation revolved around the contents of this precarious little jar Jack had on his end table: Inside it was concentrated hemp oil, capable of treating, and very often curing, many forms of cancer.

I repeat: *There is an oil, made from hemp, that is capable of curing, killing, destroying the cancerous cells that plague human beings.*

Inside it was concentrated hemp oil, capable of treating, and very often curing, many forms of cancer.

In the beginning, that first night, I had no empirical proof of any of this being true. There was no evidence on-hand, nor could there of been unless somewhere on the premises there had been a patient being treated with the oil. So...everything, then, was hearsay. The world knew nothing at all about this oil, there were no websites promoting it, nor were there medical associations discussing the probability and possibilities of its' existence. Not yet.

However, what I did notice at the time, was that Jack was applying the oil to a lesion on his leg at one point in the evening. When I asked what he was doing, he explained that his entire life he'd been plagued by painful skin lesions, red, purple and black, that would cover his arms and legs sporadically.

This one particular lesion on his shin that he was applying the oil to was, "his last." Jack had been using the oil as a topical skin surface treatment for just shy of a year, and had found that the oil had effectively removed all the le-

sions from his skin, one by one. That was the beginning of my empirical proof. (It is public knowledge now that the oil may also be applied to skin cancers and lesions.)

There was a good amount of this oil on hand that night, one-ounce or more, and needless to say, we sampled it copiously.-- each passing hour brought another spoonful of cancer-killing-cannabis-kryptonite to be dissolved and ingested.

This particular oil, or batch, must have been a product of the very potent test-run days (and, this was Jack's personal stash, we must take into account), because the oils texture resembled black tar— oil black, and extremely viscous. When placed in your mouth it dissolved very slowly, eventually I found myself swallowing little licorice like pieces for the sake of saving time, because the texture was not so appealing, and the spoonfuls just kept coming. The taste was surprisingly mild, though black as oil and thick as molasses, this oil only had a slight cannabis flavor. The effect is similar to that of strong marijuana edibles, or any digested cannabis, a very weighted down body high.

That long night concluded on Jack, red-eyed and glued to his lazy boy, saying, "I don't get this high very often, maybe once or twice a year."

And somehow.... in a strange, code-of-the-stoner, save-the-world kind of way, I drew pride from that admission of Jack... from knowing that we had shared that long conversation together, blissfully sedated, two sets of teeth painted black with the gooey future of cancer and cannabis pasted between our gums.

Part Two: How the Oil was Developed and Why it Has Been Kept a Secret.

To this point we have established that there is, out there, oil being produced, made from the hemp plant, capable of treating and in many cases, curing cancer. All this is true, verifiable-- and so it is all the more puzzling and dismaying to know that this oil has not been utilized in one hospital, hasn't even glanced the cover of a national newspaper. In accordance with every concept of logic, this is nobel-news that should be making the cover of every magazine in the country, and should be being utilized in every hospital around the world, right?

Yes. However, this is not the case.

The Hemp Oil that Cures Cancer...

Why-- You might be asking? Why would the government not be researching this medical breakthrough and utilizing it to its' full potential?

The first reason: health care policies enacted by our government are just as much the product of Congress and it's constituents common health goals as they are those of lobbyist and special interest groups who represent Big Pharmaceutical in Washington.

It is these "special interest" lobbyist swine, who orchestrate precisely the corrupted political mechanics that ensure any and every all-natural, holistic cure out there, is always wiped off the map. It is the job of Big Pharma's lobbyist in Washington to make sure that the policies of Congress-- and the trillions in health care spending they allocate-- correlate financially with the plans of Big Pharma: billions dollar contracts today are competed over like military contracts in the 1950's: You do whatever it takes to seal the contract with Big Government.

Which brings us to the second reason, and the real underlying force behind Big Pharma's desired concealment of hemp's medicinal potential: Money. As the creator of this Hemp oil is quick to point out: "Many large pharmaceutical companies that still exist today sold hemp based medicines in the 1800's and early 1900's. They knew then what I have recently found out. Hemp oil if produced properly is a cure-all that the pharmaceutical industry can't patent."

This hemp oil truly can cure cancer; however, you can't patent hemp, and so, unfortunate for the general public and currently suffering cancer patients out there, Big Pharma can't make a large enough profit margin to justify saving your life this way. Because...

"All-natural" is the enemy of synthetic drug manufactures; the very term and concept that can keep anyone in the industry awake at night. It essentially means: un-patentable.

Synthetic drugs are the type manufactured by pharmaceutical companies, and are, apparently, the only type which can produce profit margins high enough to keep upper management afloat on yachts, a cavalry of lobbyist cozy in high-rises overlooking Capitol Hill, and a street-army of well-dressed, beautiful pharmaceutical sales representatives who move from one doctor's office to the next, offering up samples of the newest cures and lunch tickets for all

the staff-- and making six figures to do this.... keeping of the ties.

And if THC were able to cure, or even reduce cancer, which it has been clinically proven to do, and if this news made highly accessible to the public, it would mean, other than the painful, expensive and prolonged methods of trying to cure cancer we are currently offered-- pills, radiation-- there would be, in the soil of earth, another option for us; a natural, and free, substitute to the options Big Pharma controls and delineates. This new hemp option would be, good for us, and terrible for Big Pharma. It would be a major hitch in the economic models of these pharmaceutical giants because not only would it be an un-patentable cure all, but it would be a cure all that has so many positive cancerous treatment faculties it would cut a

His words seem to be spreading, his truth, finally coming to the surface indefinitely. Today, everything is changing.

huge slice out of the bread and butter profits these companies survive upon: All forms of cancer.

The creator of this cancer treating hemp oil is a man named Rick Simpson. There are people like Eddy Lepp and Jack Herer, both friends of Simpson, who have been in the public light for years and known about the oil, the testing being done and the revelations coming back, but had been quiet about forthcoming with the information. Rick had remained entirely below the surface about it for years, both for legal and moral reasons. When I first spoke to Jack about the oil, two years ago, before I knew much about it or its' creator, Herer would speak in a very hushed conspiratorial air about Simpson and the research being done. It was an eerie tone he took on, and there was, for good reason, more than a tinge of government-com-

They knew then what I have recently found out. Hemp oil if produced properly is a cure-all that the pharmaceutical industry can't patent."

ing-to-get-us paranoia in his voice.

Yet at first reaction to the tone I was blasé, dismissive-- "this was just hippie paranoia, the by-product of too many psychotropic agents ingested over the years." But then it sat in: I realized the reality behind these words and the results of Simpson's oil; the gravity of the end result-- lives; and the economic ramifications this oil could have for ill on the trillion dollar health care system currently in place.

It wasn't long and I began to honestly wonder myself: Is there a world out there, off the books, underground, that exists... a Bourne billion dollar world of corporate espionage, computer hacking, infra red, fully equipped with loaded assassins who look like models and wear designer suits while they carry out their hits? Right then I realized that Jack Herer had an honest fear of the government, or at least the pharmaceutical companies and their ties to the government; as did, to an even greater extent, Rick Simpson.

But that was two years ago, however, before the lid on this oil had been popped to the public.

Today, Rick Simpson has come forward about the oil. He has given many small interviews and many demonstrations on how to make the oil which are available online, as well as on his own hemp oil promoting website. He is no longer a man of mystery living underground. He is however, currently living in exile in Europe, fearing that returning to his Canadian homeland will result in his arrest. Let me explain.

Over the past year, Simpson has gone public

with his oil. Today, he is a man on the move, a man of many letters and much research. There is a website operating, phoenixtears.ca/index.php, which fully outlines the hemp oil's contents, how to make the oil yourself, answers just about any question you might have regarding the oil, and provides letters from patients treating themselves with hemp oil, or cured patients who have written letters praising Simpson for saving their life. The following is an insert section from Simpson's website, which outlines how much hemp oil a patient should take:

"One pound (500g) of bone-dry hemp buds will usually produce about 2 ounces (55 - 60 mL) of high-grade oil. This amount of oil will cure most serious cancers; the average person can ingest this amount in about three months. This oil is very potent so one must begin treatment with small doses. A drop of oil about half the size of a grain of rice, two to four times a day is a good beginning. After four or five days, start increasing your daily dosage very gradually. As time goes on the body builds a tolerance to the oil and more and more can be taken. In cases where people are in a great deal of pain, I recommend that their dosage be quickly increased until it kills the pain. High quality hemp oil will stop pain even when morphine is not effective. The oil can be applied to external injuries for pain relief in minutes."

It is mind-boggling information like the above—*"this amount will cure most serious cancers; high quality hemp will stop pain even when morphine is not effective"*—that has brought Simpson's oil to the forefront of cancer research. This invention of his is now being discussed by Big Pharma, being advertised in numerous magazines across the world, is making scientific journals daily, and is garnishing followers: "ten thousand per day," as Simpson says.

However, the fact remains, that hemp and marijuana are federally illegal in the US and Canada, and therefore, Simpson had been, since he'd gone public with the process, in effect, broadcasting the fact that he was growing—How else could he be producing large quantities of the oil?

This came to haunt him again, as it has in the past, when on November 25th, 2009, Simpson's house was raided by the Royal Canadian Mounted Police. The raid occurred while Simpson was in Amsterdam, where, the day after the raid occurred, he was crowned Freedom Fighter of the Year, at the annual Cannabis Cup 2009.



Tom GREEN

Colorado Grow's resident expert and cultivation editor shows a sample of some of his indoor gardens.





“ I put stakes in as soon as I see the first flowers form. Once the flowers start, the branches get heavy, so they need that extra support. The stakes in this photo are pretty long. I used those because I would rather have too much stake than not enough ”





“ It really helps to have a lot of room on both sides of a bed. Having room to work on your plants is really underrated in the cannabis community. A lot of people pack plants into their growing space. That is bad for air circulation and makes it harder to do regular plant maintenance.

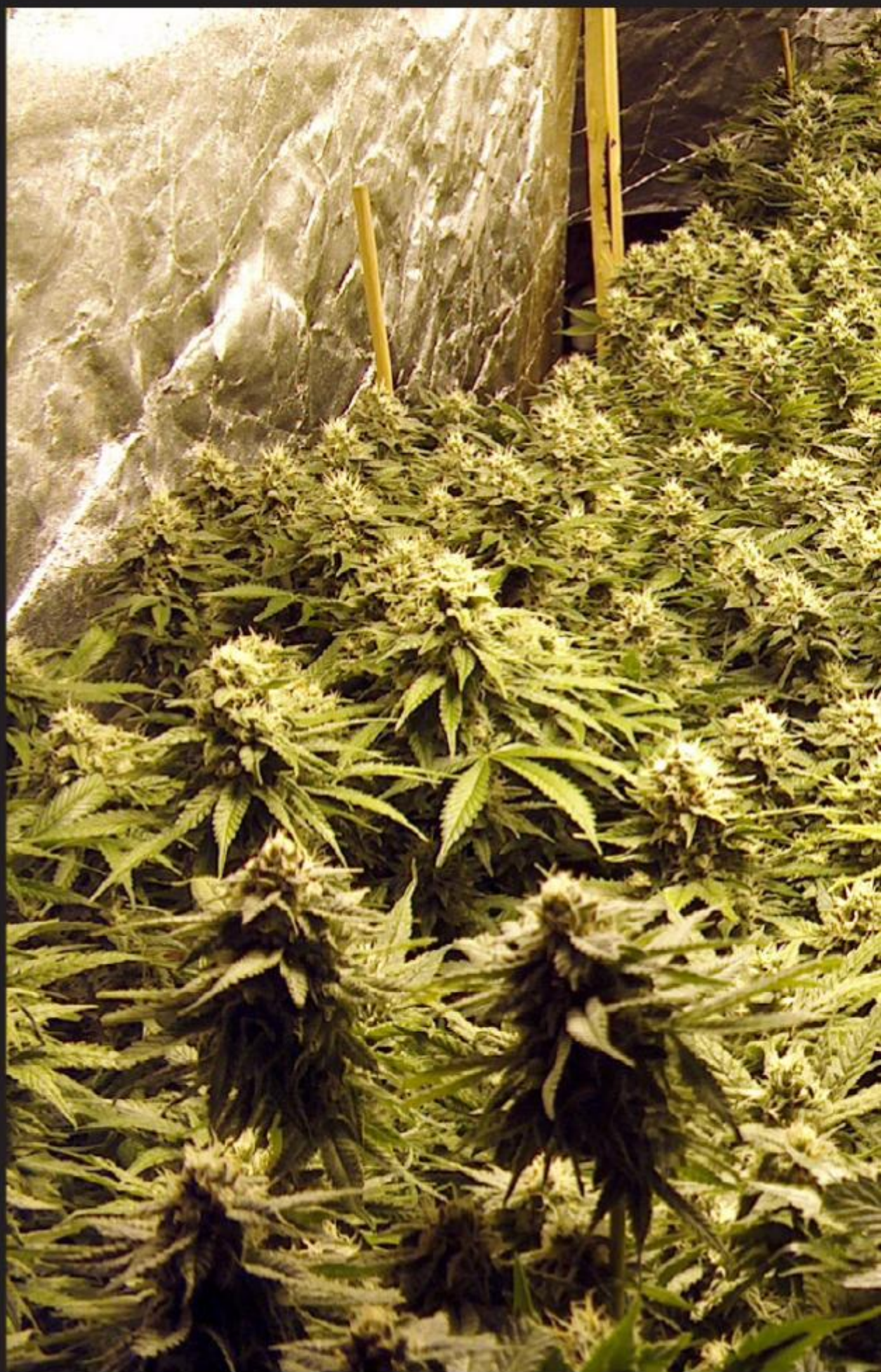
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“

I supercrop all of my plants really early on to set up a good rack of tops. Supercropping, thinning, forming, focusing, bending and then stalling to keep the canopy perfectly flat. Once the plants reach the desired height, that's when you flip into flower. You have to develop a strategy for each phenotype. After a couple rounds of the same strain you figure out how big your plants to be when you flip them into flower.

”









“

Vertical growing is efficient but it is really hard to get the plants to grow towards the light. The ebb and flow (flood + drain) octagon on left never achieved better results than a horizontal, soil garden. The one benefit of this octagon was that the lower growth on the plants came out denser and larger than it would have been in soil

”





I spray a 3% hydrogen peroxide solution around the planting area after every run. This kills any mold, fungus, bacteria, or insects that might be left behind. If you want to stay away from hydrogen peroxide you can use vinegar instead. 10% of growing cannabis is cleaning up after yourself. There is a lot of cleaning, rinsing, and spraying that comes with this job.

I work on my plants individually, one-by-one. I'll take a plant off to the side and inspect it from every angle.







When I realised that I could manipulate a plant to do whatever I want, and could estimate the way it would respond... this was the ah ha! moment that completely changed the way I grow cannabis.



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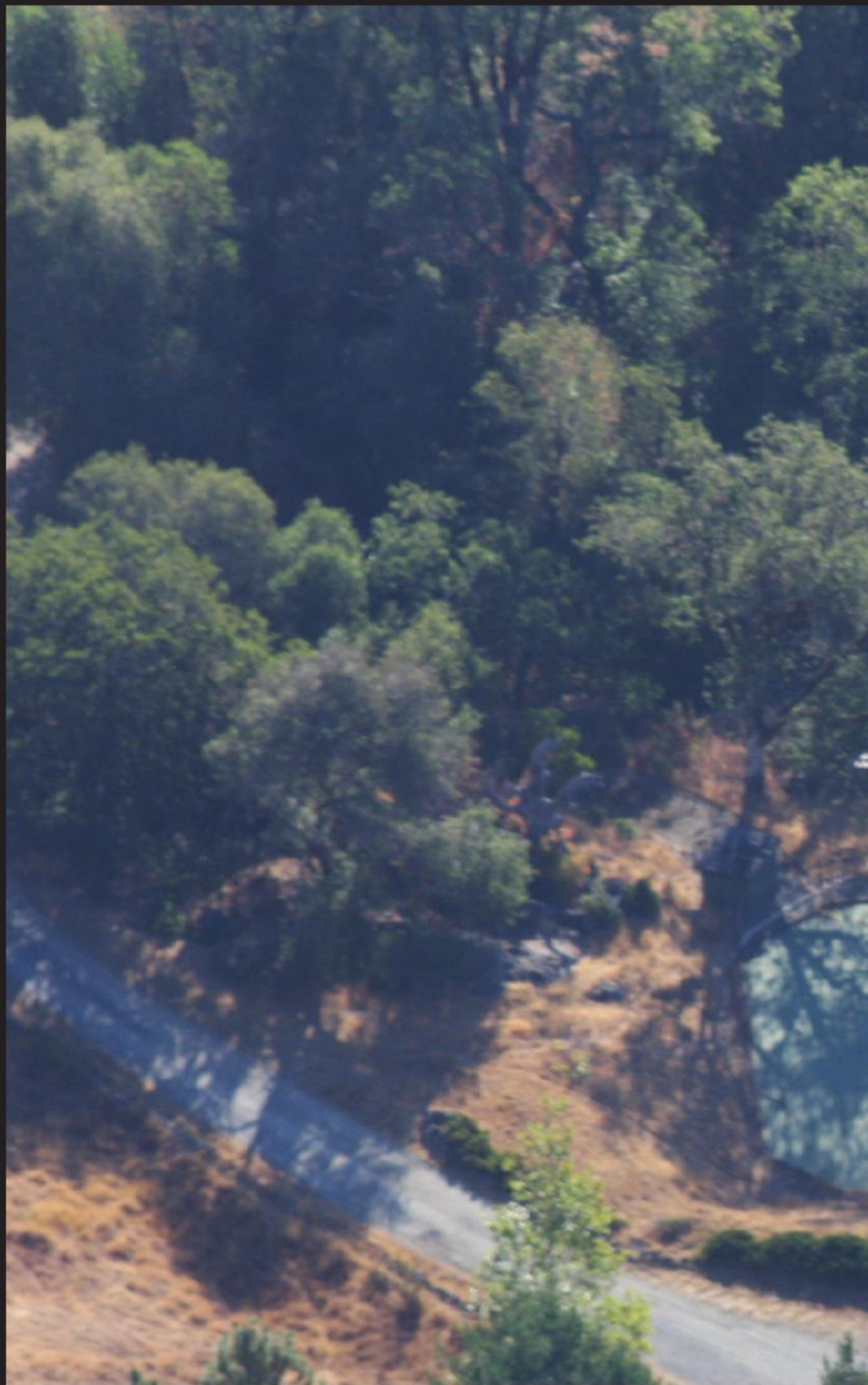




From Above













DENVER'S NEW GREEN GROWTH INDUSTRY

by J. Deiker

Unemployment in the country is narrowing in at 15%, economists agree. However, this common estimate is very misleading and overly optimistic, because it does not account for part time employees and undocumented citizens who are out of work as well, which, when added up, realistic statisticians usually agree puts the number at closer to 20%. This means that one in five citizens within the US workforce is currently out of work. Our country is dead in the grips of the worst economic recession since the Great Depression, and there is no Great War on the horizon which will pull us out of the clutches of disparity, as World War II did in the late 1930's and early 40's.

No. By all indications the economy is dismal and there is yet to be a definitive light at the end of this tunnel.

In Denver, Colorado, however, there is a new green growth industry, which, whether you are in favor of or not, is definitely creating more jobs than just about any other business sector in the city. In fact, as is the case in Los Angeles, the other cannabis capitol in the US, medical marijuana seems to be the only non-stagnant business model left in this country: You only have to witness it first hand to realize the size of this emerging ganjaconomy.

To bring things into a real, empirical perspective, just look at the number of jobs that medical marijuana is, and will continue, to generate, directly, and indirectly, as the movement draws more steam.

The people who are directly affected by the medical marijuana model are the owners, employees of the dispensaries, and growers of the marijuana which is sold into the dispensaries. Dispensary owners are deriving an income from their entrepreneurial venture, as they should, so long as it is a reasonable number when correlated with the revenue of the dispensary. This money goes back into the economy in numerous ways: paying employees, rent, food, utilities, re-circulation of the currency... life.

As for the employees, most of them are getting paid minimum wage or a little higher, and many work full-time. The security guards, which usually there are one or two of, usually get paid between 15 and 20 dollars per hour for their work. If, hypothetically, there were 100 dispensaries in Denver—a low estimate—and each dispensary had a minimum of five employees and one security guard, that would account for 600 new jobs, not counting the 600 owners, totaling 1200 newly created jobs for Denver, this being the lowest possible scenario we could present—the figures are probably two or three times as high.

The growers are also directly affected by this new economy, by directly, meaning, that they derive the largest percentage of their income from medical marijuana—over 50% of their net income. These calculations are even more ambiguous, because it is difficult to gauge how many strains there are per clinic and how many growers were responsible for the cultivation—that is to say, if there are 1000 different varieties currently on sale in dispensaries in Denver, those were probably

broken down from a larger, presumably one-pound unit of marijuana, and the impossible data to find, would be how many growers accounted for those 1000 strains?

In any case, there are probably at least five-hundred growers in Denver who are legitimately growing and selling medical marijuana (very low estimate), and in doing so providing a descent income for themselves, income which also goes back into the economy.

Thus far, that places the number of new jobs, minimum, at 1700 people. This, again, is a very conservative, very low estimate. The number is probably one-half, to twice as many directly affected, newly minted marijuana cultivators out there stimulating this deadpan economy with money derided from "flowers."

...there is a new green growth industry, which, whether you are in favor of or not, is definitely creating more jobs than just about any other business sector in the city.

And that's just the directly effected. How about those who make auxiliary incomes, who draw paychecks from the MMJ indirectly? Well, who am I speaking of?

To get down to the very bottom of the indirect effect a proliferating medical marijuana economy has, think about the dispensary structure itself, and the build-out which must first take place before you can open each one of these new facilities. This requires not only carpenters, plumbers, electricians, internet cable installers, atm installers, TV installers, credit card installers, and inspectors; but even beyond the people, each new facility stimulates the economy not just by providing build-out jobs, but also by

purchasing all the materials it takes to do the jobs and maintain the clinic thereafter.

Take into account the wood, wiring, desks, lamps, credenzas, computers, printers, pens, paper, ink, couches, chairs, refrigerators, water dispensers, display cases, jars, shelves, file cabinets, files, everything you must have-- literally hundreds of items spread between Office Space and Home Depot that must be bought at the beginning of, and then monthly, which a clinic constantly needs in order to open and maintain itself properly over time. Moreover, these items are purchased locally, thereby helping to stimulate the city's economy by re-circulating the money at home.

Furthermore, after the build-out has been completed, take into account those people who got paid to make this whole dream come true in the very beginning. There is an insurance agent who took a nice fee; a real-estate broker who helped you find the building for a small fee; a legal representative who you consulted before you opened the new business and wrote a minimal amount of legal document for a considerable charge; a city office you paid a substantial fee to so they could print a paper permit that allows you to operate; and, of course, the monthly indirectly effected: the landlord of the space you rent, the power and gas companies, everyone you write a check to once a month to keep the lights on.

The indirect figures are even more difficult to gauge than direct, but the number is high. If there are 100 collectives that means there are probably at least 90 landlords collecting monthly checks. Also, for each of those 100 collectives opened, let us assume there were 20 legal consultants the owners all went to, and 50 different agents who helped in finding locations. That number adds up to 160 individuals who have indirectly, without creating the work, derided an income from medical marijuana. As for the workers who did the build-out, usually between three to ten men, and all the installation-repair service men, this number could surpass 1000 easily.

Taken all into account, this means that on the low end approximately 3000 people are being employed, making their income and living from Denver's new Green Growth model. Further, I hypothesis, that Denver has a larger medical marijuana scene than I have accounted for above, possibly twice, or thrice, as large. If this were true—and I believe it is—it would raise that number to 5000 newly created jobs. No small number for a bunch of potheads.

DEA Agent in Charge of Over-Seeing Denver Dispensaries Flip-flops

The month of February beckoned forth a moment of fear for dispensary owners in Denver. It was confirmed to the press by DEA spokesman Mike Turner that in the previous weeks there had been a number of raids on grow-facilities within the state. This led many pro-marijuana advocates to suspicion the DEA of launching the beginning of a war against medical marijuana in Colorado.

These fears were only accentuated, when, on Friday, February 14th, Jeff Sweetin, the special agent who has been put in charge of DEA operations in Colorado, was quoted in the Denver Post as saying: "The time is coming when we go into a dispensary, we find out what their profit is, we seize the building and we arrest everybody. They're violating federal law."

These harsh remarks ran contradistinction to Colorado's 2000, Amendment 20, medical marijuana ordinance, and led many people to believe that Sweetin was setting up for a battle with dispensaries. As of Friday the 12th, it appeared, Sweetin, had not gotten the memo passed down over a year ago by the Attorney General (see page:) which had unequivocally declared that the DEA was not to prosecute medical marijuana facilities so long as they were in clear compliance with state laws. Consequently, it looked like, for a moment, that Sweetin was going rogue.

However, for whatever reason, after having made those remarks on Friday, which sent seismic shutters through the smoke waves of Denverites, Sweetin had decided to go back a bit on his position; flip-flopped might be a better

word for it. I have a feeling, someone higher up, may have sent him the memo.

On Monday, February 15th, only three days after his aggressive comments, DEA special agent Sweetin took a different tone. When asked the question as to whether the DEA was beginning a war on medical marijuana dispensaries in Denver, his answer was much more subdued: "We are not declaring war on dispensaries," he said. He also added, with a comical tone, "If we were declaring war on dispensaries, they would not be hard to find. You can't swing a dead cat around here without hitting thirty of them."

Throughout questioning Sweetin maintained that he was only going to be prosecuting those growers and owners who were blatantly violating State laws—ties to cartels, overgrowing, violence, selling to minors-- and he was quick to make the point that the DEA, to date, has never shut down a Colorado dispensary.

The Sweetin of late has been much more benevolent than the Sweetin of that Monday. Let us hope that he is a man of single sided convictions. If he sticks to his latest remarks, then Denver's DEA agent-in-charge of overseeing the scene could be the righteous man this city needs: a Federal agent who understands and strictly follows the guidelines set forth by the current administration regarding medical marijuana.



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Experimental Cannabis Tissue Culture

By David Sigman

Plant tissue culture (T.C.) is over a 60 year old science, but the techniques used in vitro (literally, "in glass") have continued to develop since their original popularization among Orchid growers. Plantlets are grown in very small sealed glass containers on a gel medium with a balanced diet of chemicals. After the initial sterilization of the media and containers the plants are introduced using a sanitary technique in a clean hood. This method can grow not only miniature plants, but even individual cells and organs. Plants grown in culture adapt well to the micro greenhouse environment and form miniature bonsai like structures that allow for the plants to be propagated by meristem tip cuttings even when only test tube size. Micro propagation is the correct term to use when referring to the asexual multiplication of plants in vitro. Tissue culture is a term borrowed from animal T.C. and actually refers to the culture of isolated tissues. There are a number of unbelievable benefits that can come from a tissue culture lab.

Clones may be created using meristem tip cuttings, but on a much smaller scale. An almost perfect success rate, the high number of plants per square foot (180-360) and the low intensity lighting (less than 10 watts/sq. ft.) are why T.C. is used for commercial mass multiplication. Micro propagated cuttings have unmatched lateral branch development and can be guaranteed free of any contamination from pests or pathogens. The low cost of keeping individual plantlets alive makes this an ideal system for saving especially important plants used in breeding or multiplication. Cultures do not require daily attention, but only need to be refreshed once every 3-5 weeks and can be put into a refrigerator for extended storage.

Somatic embryogenesis is a process unique to tissue culture. A plant is introduced into culture and then forced to grow undifferentiated callus tissue. This tissue is put through a process that transforms it into a clump of continuously germinating embryos that all form from single cells of the original clone plant. This process can lead to the discovery of new plant characteristics

from clones. The genotype remains the same, but the plant has the potential to express a slightly different phenotype with each somatic embryo. The seed/clones grow just like seedlings with a taproot, embryonic leaves and seed start vigor, yet still retain their primary traits.

Protoplast (cells without cell walls) fusion is novel technique used by advanced tissue culturists. The cell wall of a plant is broken down until only the protoplasts remain. These are then cultured until they form a clump and can be mixed with other clumps of protoplasts from the same species, or foreign species. The protoplasts are encouraged to recombine with each other via chemicals or electric shock and form new cell walls around the fused center by weaving together both sets of plant instructions to create what is called a somatic hybrid. This can produce results such as true female-female combinations of prized clone only plants (ex. Cypress O.G. Kush X pre-98 Bubba) without the use of drawn out breeding programs. Combinations of cannabis sativa and other plant species like grapes, mint, succulents, etc. are all also possible, but the results are highly unpredictable.

Tissue culture can also be used to induce polyploidy using the chemical colchicine (an extract of the autumn crocus [*Colchicum autumnale*]). Polyploidy refers to plants that have extra chromosome sets that usually develop during the early stages of cellular meiosis. Normally Cannabis is diploid (2 sets), but in experiments, triploid (3 sets) cannabis has been shown to use more water, grow faster and be much more potent than the diploid form. Many seeds can simultaneously be subjected to treatment in vitro to increase the odds of finding the 1: 3000 that survives treatment.

The production of secondary products using cell culture is also possible in more elaborate T.C. facilities. Cannabis produces secondary products in the form of cannabinoid laced terpenes when stimulated. Tiny bits of plant material are forced into a callus state from which they are then placed in a liquid bio-reactor where they are given the stimulus to produce secondary metabolites. Chemical extraction of the T.H.C. then would yield very pure hash oil without ever growing whole plants.

Cannabis tissue culture is an interesting field that a lot of work has yet to be done in. Breeding programs could take advantage of advanced T.C. techniques and force cannabis to evolve at a high-speed rate. Cannabis tissue culturists face challenges like mandatory minimum sentencing for high plant numbers, and a general lack of previous experimentation and guidance on the topic of Cannabis T.C. However, maybe polyploidy somatic seedlings and rare female-female clone crosses sold in vitro through mail-order or off the shelf will become average varieties in the cannabis garden of the future.



From one bud to another.



2

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Sustainable Bio-Organics

By David Sigman

The choice between a synthetic method and a natural approach is a current popular topic, but an old theme. The outwardly specialized subject is one that plays a remarkable part in everyone's life. Before the dawn of the agricultural revolution humanity spent its time following game and gathering food from the forest. The agricultural revolution transformed nomadic hunter gatherers into domestic farmers. The first farm tools were probably reformed hunting weapons. This is the time from which we get the quintessential horticulture practices. Techniques like slash and char, digging the soil, composting, pruning, crop rotation, re-seeding, etc. were all developed during the agricultural revolution. These techniques created the bridge between the hunter-gather people of the ancient forest and the mechanized workers of the industrial era. Our civilization would be radically altered by the exponential positive-feedback loop of technology that gained momentum in the 1800's. New machine tools made much higher food production possible. The population redoubled itself in a matter of years, fewer people were needed to farm and most people toiled factories jobs instead.

Medicine was one of the first fields to implement industrial technology. There was and still is a large dispute in medicine that parallels the horticultural debate. When the industrial revolution began, medical doctors were separated into two camps in America. At the beginning of the feud, the natural doctors were very popular because their practices had been used for hundreds of years. Doctors were permitted to practice freely without any medical license because medicine was seen as a home service; it was beyond the consideration of most people that doctors would become the specialists they are today. The modern doctors were given a very bad reputation during their early years for the use of mercury and excruciating operations; however with the support of the American Medical Association, modern doctors improved their public relations and changed popular opinion about modern medicine. Just as natural medicine was defamed by the majority institutions, so too was organic horticulture.

The organic vs. synthetic debate of the early 20th century would be a short battle with an apparent winner, but the seeds of a future debate would be sown with the mass implementation of chemical agriculture. Farmers would either use their customary ways, or adopt the use of the mechanized chemical scheme. The first negative response to chemical fertilization was not brought up for a few years. Keen farmers soon began to see that after a boost in the productivity of their crops for a few years the same amount of fertilizer produced consecutively smaller yields for each year afterward. They were required to increase the amount of fertilizer to compensate for the loss of natural soil fertility. Farmers, like doctors, became specialists growing one specific kind of crop using a license and pharmaceutical chemicals.

Hybrid varieties represent the standard in production, but new seeds must be purchased every year from the supplier instead of a farmer being able to save the last seasons seeds. The reason is that hybrids represent a vigorous F1 generation that when wind pollinated will produce a F2 generation that has many undesirable recessive characteristics. Heirloom varieties are landrace strains that have been acclimated to their growing location through natural selection and some simple artificial selection. When Heirlooms are wind pollinated the resulting seeds can be saved and used to successfully produce a new generation consistent with the last. These heirloom, or landrace, varieties are often more nutrient dense and have been making a return to gardens in the name of self-sufficiency.

The synthetic system has been brought to untold heights, both good and bad. The good thing is that food production is higher than ever. The problems with this system are as myriad as they are alarming. The industrial food complex has polluted the ecosystem with salts, put heavy metals into the food chain, depleted global topsoil resources, created pesticide resistant bugs, etc. People can afford to buy food at cheaper prices than ever, but some are turning it down due to their awareness that the food contains harmful chemicals, carcinogenic pesticides, and even foreign D.N.A. This kind of awareness is what marks the newly resurrected debates in horticulture and

medicine.

A better understanding of both sides has been gleaned by the researchers of today. Topics like herbal medicine and color therapy are now of scientific interest to the very organizations who denounced their effectiveness a century ago. Botanists are studying the harmful effects of chemical fertilizers on soil life and the diminished nutrient density of plants grown synthetically. Indoor growing has gone mainstream and the money generated has fueled government, university, and private interest in the once fringe activity.

With the right knowledge, all of our fertilizer can be produced locally where the plants are grown from renewable resources that actually improve the soil over time.

Many indoor Cannabis growers see the choice between hydroponics and soil the same way that farmers looked at chemical versus organic inputs. However, when analyzing these options it is important to distinguish between the type of input (bio-active/organic/synthetic) and the delivery system (soil/soilless/hydroponic/aeroponic). When starting with a clean slate, it is best to choose your input based on the type of delivery system you will be using because they are not all interchangeable. True aeroponic systems, for example, which nebulize water using a high frequency oscillating disc, are not safe to use with bio-active inputs. The nutrient-ion containing water droplet created by a nebulizer is so small (less than 5 microns in size) that it can pass through the root membrane with minimal friction, but the action of the oscillating disc kills any beneficial microbes.

When a grower chooses a completely synthetic system all of the nutrients the plant would normally get from the soil must be supplied through the fertilizer. It has been established that there are roughly 16 (15-18) nutrients that plants need to grow. These 16 nutrients must be in proper balance with other growth factors for the plants to flourish. The healthiest synthetically grown plants are grown using

fertilizers that were specifically designed to meet that species nutritional need. When synthetic nutrients are used on a commercial level, whether hydroponically or in soil, the fertilizer is designed to provide the needed nutrients in the proper quantities and no more. This is done by testing the soil and stock water for initial nutrient and mineral levels, then formulating a fertilizer that fills in the deficiencies. The plants are regularly bioassayed to learn what exactly is being taken up by the tissue system and then adjustments are made to the nutrient formulation based on the result.

The plants get used to the elements in their chemical form and produce fewer exudates for microbes to live off of. The roots instead absorb as much of each nutrient as possible without regulation. This often leads to problems like nutrient "burn" and excess levels of nitrogen and phosphorous in the final product. This theory of plant management is similar to the way doctors prescribe medication; a chemical is synthesized and sold as a pill that targets the symptoms of a problem, but not the underlying cause. The source of the problem is that the root system is small and producing very few exudates. It might seem at first that the plant using energy to grow roots and produce carbohydrate laden exudates is an inefficient task, but the energy the plant uses producing exudates is repaid multiple times by the microbes which depend upon it. They go a step beyond the nebulizer by actually colonizing the inside of roots. The flow of nutrients is adjusted by the exudates in a similar way to the adjustments made by a botanist refining a nutrient formula based on the results of a bioassay test, except that it happens in real time. This occurs flawlessly regardless of species or variety because different microbes are attracted to specific plant exudates. The plants are provided with more than 16 nutrients which allow plant byproducts to reach their full potential. Bio-organic systems function best when as many physical elements as possible are available to the rhizosphere.

A comprehensive guide to Bio-organics still does not exist in popular form. Part of the reason why synthetics are so prevalent is that the commercial organic model is not more sustainable than the commercial synthetic model. The understanding of soil ecology and bio-organic techniques combined with sustainable land management is the only healthy long term option for large scale agriculture. At the current rate, food raising systems will become highly overloaded and the modern supply networks that depend on importing materials, whether organic or synthetic, will experience ruin and decline. With the right knowledge, all of our fertilizer can be produced locally where the plants are grown from renewable resources that actually improve the soil over time. This approach is different from bio-active, organic, or synthetic because its self organizing principle is biological sustainability.

Integrated Pest Management

by Tom Green



Integrated Pest Management is an effective and environmentally sensitive approach to pest management. Using IPM requires the gardener to evaluate the rooms environmental conditions and plant life closely. Being in touch with your plants and predicting what is or going to happen is the hardest part. By taking preventive measures you give yourself more room to deal with a problem before it gets out of control. IPM requires familiarity with a broad range of biological, cultural, chemical, synthetic and organic products used in the prevention and treatment of pest control. By controlling the life cycle and environment of the pest population you will be in total control. Switching from one method to another does not allow the pests to create an effective resistance. There is no real right or wrong way to deal with a

pest problem since every grower and garden environment is different. It is always the grower that will decide what is best for the situation before him/her. Preparing the plant for an application should involve some plant interaction. Leaves with heavy infestation (50% or more of surface) of bugs or molds must be removed before application for the desired knock down effect. Leaves touching the media you are using need to be removed as with the middle of the plant to promote free air flow and coverage of spray. This will also reduce the hiding spots for pests and optimal effectiveness on plant surfaces.

After cleaning up the plants any partly damaged leaves left should be manually cleaned by hand. Any plant in a 2 gallon pot or less can also benefit from manual pest removal before spraying. Make sure to wear gloves and keep them moist with water to help the sliding of your fingers over the leaf surface. Another important aspect to consider is the changing of your clothes. Bugs can stick on you if you go from room to room or outside gardens to inside gardens.

When spraying the plant be sure to cover all surface area including the underneath leaf surface. Turn lights off after for at least 4 hours for contact time. Adding cocowet(from coconut trees) or a few drops of natural dishsoap works in

spreading oil based products very evenly over plant surfaces. Keep in mind that 25-75% of your spray will be dispersed in the atmosphere. When using a pressurized sprayer on average size plant; one quart per 4x4 should be enough.

If using strong synthetic chemicals please use responsibly. There is a risk to yourself, family, pets, and wildlife in the immediate area. It would be wise to stay away from their use all together if possible. Wearing protective clothing and a proper mask is required. Use as little as possible to lessen the risks associated with them. Dip your plants when they are still very small so your using less and have better coverage. More thorough coverage ensures more effectiveness and less pest resistance. Using botanical class chemicals like pyrethrums are non-systemic so the better choice. Be aware that all beneficial insects will be killed with the targeted pests. The last time for harsh chemicals should be when you turn your plants into flower. There are very strong OMRI listed options like Pyganic 5% that at least have certification for use on food crops. Take Down, Bug Buster O or Don't Bug Me can be rotated in the line up but are also strong so be careful. Keep in mind that many chemical pesticides take up to 20 years to decompose.

If you like using predatory bugs you must have the exact environment-

tal conditions and light hours correct or they will perish rapidly. Consult your local garden nursery for more detailed information on your chosen biological predator. naturescontrol.com is very knowledgeable, friendly and stocked up on biologicals.

Neem; with the active ingredient azadirachtin seems to be a great all around product that humans have used for thousands of years. This tree extract has many pest and medical uses throughout the world. It is effective against a wide range of the nasties. Azatrol, pure neem, Azamax, Einstein Oil...are a few of the many brands out there to pick from.

Diatomaceous earth is a great substance to use in

controlling soft bodied insects from using the medium as a transportation vehicle to the plant after spraying has been done.

Stylet oil by JMS is a OMRI listed

An ounce of prevention is worth a pound of cure.

clarified paraffinic oil. It works to control mites and powdery mildew. This is a very clean product more growers are starting to use; it's just hard to find. Call around the shops in Mendocino County and get it shipped to you if needed. this product like neem can be used up to harvest....but most gardeners don't use anything the last few weeks.

The organic essential oil based products such as Zero Tolerance, SNS17, Orange Guard and SaferGro must be tested on a small area before spraying the whole garden. These products should be applied 2x weekly for better control. Some gardeners are not very impressed by the smell but do say they work.

Serenade provides protection against a broad spectrum of the most common fungal and bacterial garden diseases, yet is completely non-toxic to bees and beneficial insects. It is so safe you can confidently use to harvest.

Compost tea spray will help build the beneficial bacteria on the leaf surface resist mold and help with overall plant vigor.

SM-90 is not organic but does work well in an IPM program when focusing on powdery mildew.

If you like your sulfur burner no oil based products can be used for 2-3 weeks after treatment. This could cause a chemical reaction that might kill your plants. It is said to slow down mites and stop PM, but really used for large greenhouses where spraying is not really an option. Breathing it can cause major health problems so if your room is attached to your home or ventilation shares an attic....don't use it. Sulfur is indiscriminate to beneficial insects and micro-organisms

Here is a sample IPM program designed to help with mites, thrips, aphids, soil gnats and powdery mildew without using predatory insects.

*Rotate your chosen sprays (2-3) every 3-6 days in growth stage until first flowers appear, then 1x weekly until 3-4 weeks into flower.

*Top dress your plants with 1/4cup Diatomaceous Earth and 1/4cup neem seed meal every 2 weeks per 10gal container.

*Set out the yellow sticky traps 2 per 4x4 area at the base of the plants.

*Some tools recommended for use: Coveralls or Tyvek suit, magnifier, gloves, pump sprayer, atomizer or battery sprayer, mask/respirator and the instructions that should always be read before using any product.

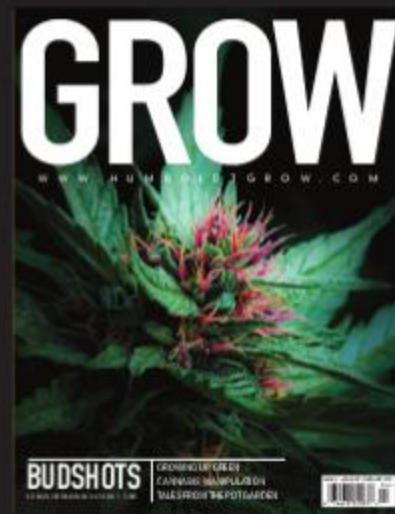
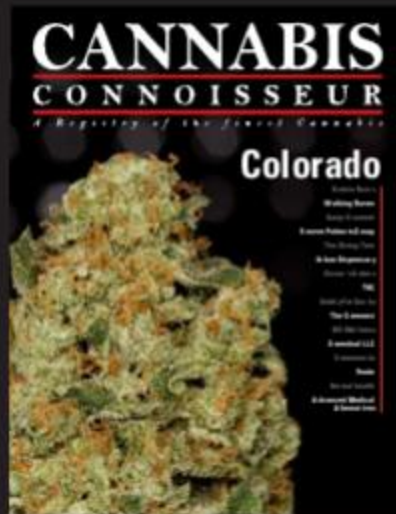
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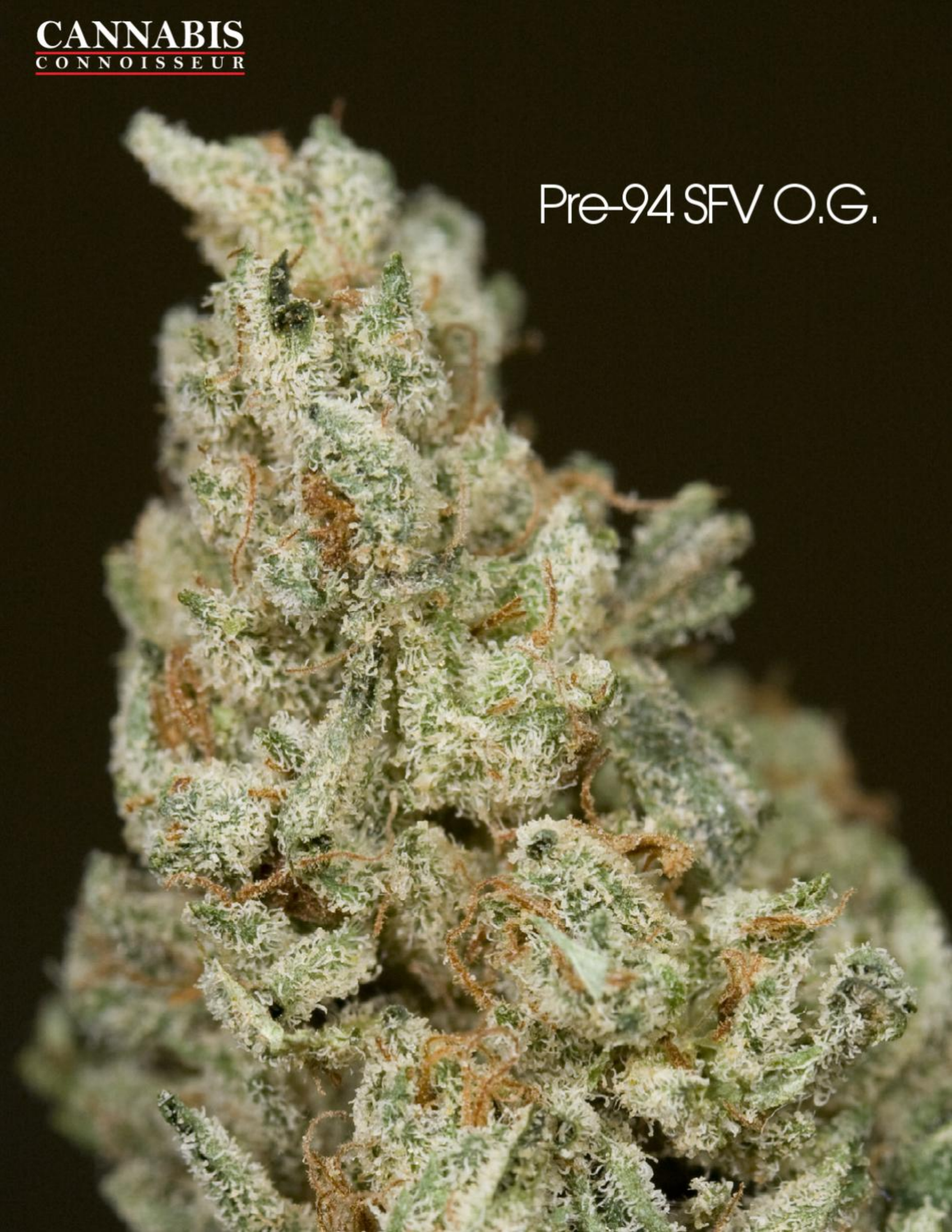
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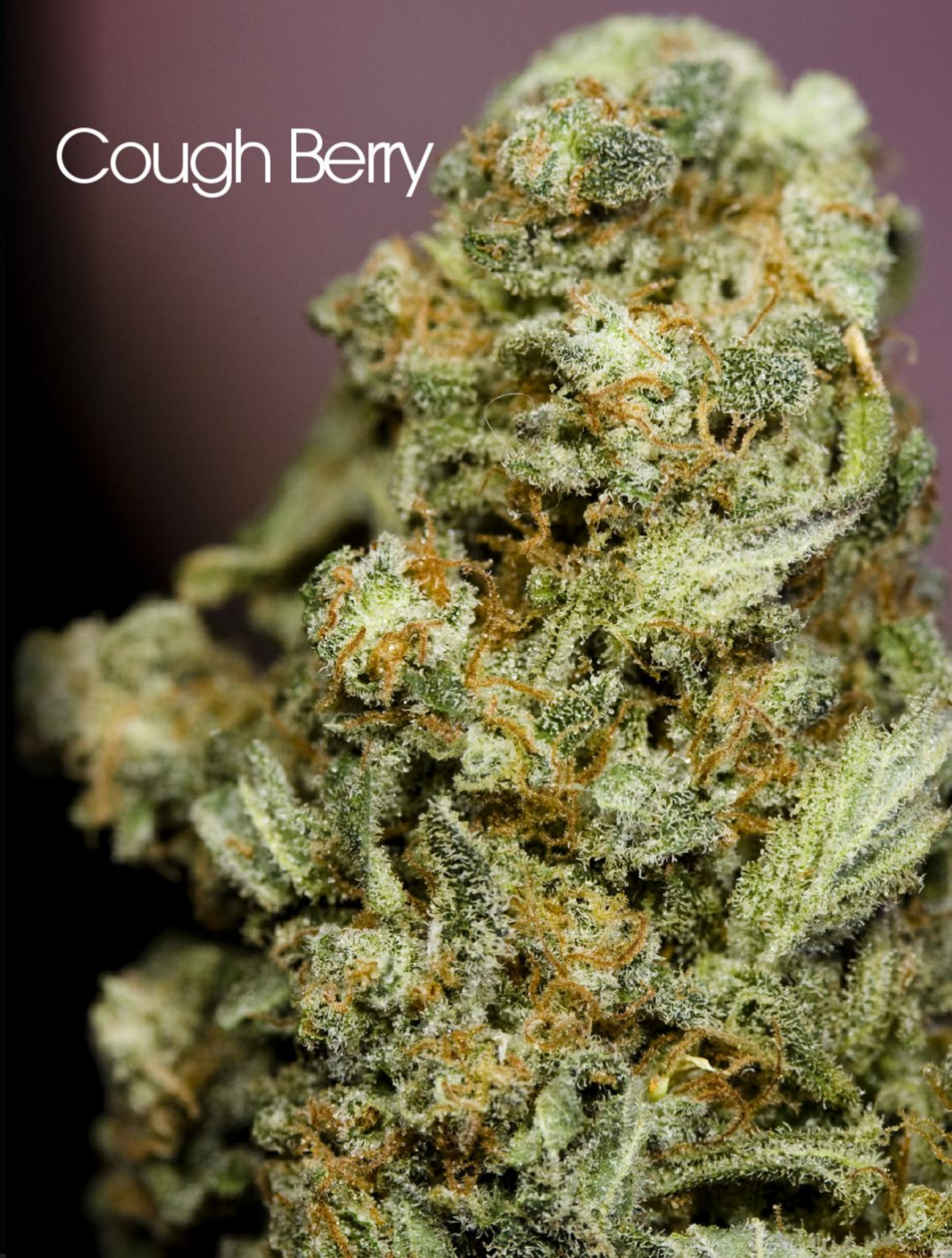
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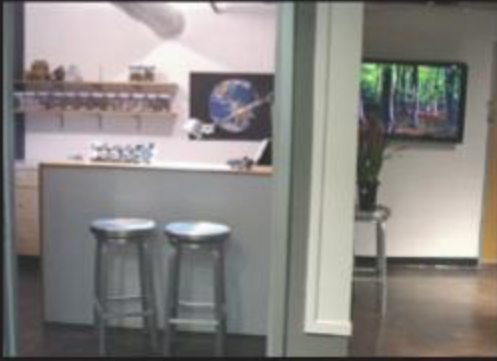
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